



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

February 7, 2011

Mr. David Heacock  
President and Chief Nuclear Officer  
Dominion Resources  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION - NRC INTEGRATED INSPECTION REPORT  
05000336/2010005 AND 05000423/2010005

Dear Mr. Heacock:

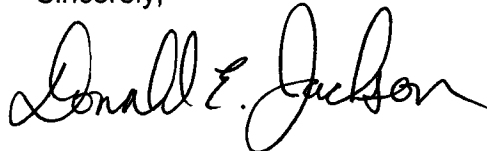
On December 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Millstone Power Station Unit 2 and Unit 3. The enclosed inspection report documents the inspection results, which were discussed on January 4, 2011, with Mr. A. J. Jordan and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding and one self-revealing finding of very low safety significance (Green). One of these findings was determined to involve a violation of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating the findings as non-cited violations (NCV) consistent with Section 2.3.2.a of the NRC's Enforcement Policy. If you contest any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at Millstone. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at Millstone. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with Title 10 of the Code of Federal Regulations (CFR) Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

A handwritten signature in black ink, appearing to read "Donald E. Jackson". The signature is fluid and cursive, with the first name "Donald" and last name "Jackson" being the most prominent parts.

Donald E. Jackson, Chief  
Projects Branch 5  
Division of Reactor Projects

Docket Nos. 50-336, 50-423  
License Nos. DPR-65, NPF-49

Enclosure: Inspection Report No. 05000336/2010005 and 05000423/2010005  
w/ Attachment: Supplemental Information

cc w/encl: Distribution via Listserv

D. Heacock

2

In accordance with Title 10 of the Code of Federal Regulations (CFR) Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Donald E. Jackson, Chief  
Projects Branch 5  
Division of Reactor Projects

Docket Nos. 50-336, 50-423  
License Nos. DPR-65, NPF-49

Enclosure: Inspection Report No. 05000336/2010005 and 05000423/2010005  
w/ Attachment: Supplemental Information

Distribution w/encl:

W. Dean, RA  
D. Lew, DRA  
D. Roberts, DRP  
J. Clifford, DRP  
P. Wilson, DRS  
D. Jackson, DRP  
T. Setzer, DRP  
K. Dunham, DRP  
E. Keighley, DRP  
D. Dodson, DRP

S. Shaffer, DRP, SRI  
J. Krafty, DRP, RI  
B. Haagensen, DRP, RI  
C. Kowalyszyn, DRP, OA  
J. Trapp, RI, OEDO  
H. Chernoff, NRR  
RidsNRRPM Millstone Resource  
RidsNRRDorLp11-2 Resource  
ROPreports@NRC.gov

**SUNSI Review Complete: \_\_\_\_\_ TCS \_\_\_\_\_ (Reviewer's Initials)**

DOCUMENT NAME: G:\DRP\BRANCH5\Reports\Final\MillstoneIR1005.doc

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

**ML110380130**

OFFICE	RI/DRP	lhp	RI/DRP	RI/DRP		
NAME	SShaffer/ss via email		TSetzer/tcs	DJackson/dej		
DATE	02/07/11		02/03/11	0207/11		

OFFICIAL RECORD COPY

## U.S. NUCLEAR REGULATORY COMMISSION

## REGION I

Docket No.: 50-336, 50-423

License No.: DPR-65, NPF-49

Report No.: 05000336/2010005 and 05000423/2010005

Licensee: Dominion Nuclear Connecticut, Inc.

Facility: Millstone Power Station, Units 2 and 3

Location: P. O. Box 128  
Waterford, CT 06385

Dates: October 1, 2010 through December 31, 2010

Inspectors: S. Shaffer, Senior Resident Inspector, Division of Reactor Projects (DRP)  
J. Krafty, Resident Inspector, DRP  
B. Haagensen, Resident Inspector, DRP  
B. Welling, SRI, DRP, Hope Creek  
J. Johnson, RI, DRP, Seabrook  
S. Pindale, Senior Reactor Inspector, Division of Reactor Safety (DRS)  
T. Moslak, Health Physicist, DRS  
J. Caruso, Senior Operations Engineer, DRS  
P. Presby, Senior Operations Engineer, DRS

Approved by: Donald E. Jackson, Chief  
Projects Branch 5  
Division of Reactor Projects

Enclosure

Table of Contents

SUMMARY OF FINDINGS.....	3
REPORT DETAILS.....	5
1. REACTOR SAFETY.....	5
1R01 Adverse Weather Protection.....	5
1R04 Equipment Alignment.....	6
1R05 Fire Protection.....	6
1R06 Flood Protection Measures.....	7
1R11 Licensed Operator Requalification Program.....	7
1R12 Maintenance Effectiveness.....	9
1R13 Maintenance Risk Assessments and Emergent Work Control.....	10
1R15 Operability Evaluations.....	11
1R18 Plant Modifications.....	12
1R19 Post-Maintenance Testing.....	12
1R20 Refueling and Other Outage Activities.....	13
1R22 Surveillance Testing.....	13
2. RADIATION SAFETY.....	14
2RS01 Radiological Hazard Assessment and Exposure Controls.....	14
2RS05 Radiation Monitoring Instrumentation.....	15
4. OTHER ACTIVITIES.....	18
4OA1 Performance Indicator (PI) Verification.....	18
4OA2 Identification and Resolution of Problems.....	19
4OA3 Event Follow-up.....	20
4OA5 Other Activities.....	23
4OA6 Meetings, Including Exit.....	27
4OA7 Licensee-Identified Violations.....	27
ATTACHMENT: SUPPLEMENTAL INFORMATION.....	28
KEY POINTS OF CONTACT.....	A-1
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED.....	A-2
LIST OF DOCUMENTS REVIEWED.....	A-2
LIST OF ACRONYMS.....	A-11

## SUMMARY OF FINDINGS

IR 05000336/2010005, 05000423/2010005; 10/1/2010 – 12/31/2010; Millstone Power Station Unit 2 and Unit 3; Event Follow-up, Other Activities.

The report covered a three-month period of inspection by resident and region-based inspectors. Two Green findings, one of which was a non-cited violation (NCV), were identified. Additionally, one licensee-identified NCV was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." The cross-cutting aspect was determined using IMC 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process (SDP) does not apply, may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Cornerstone: Initiating Events

- Green. A self-revealing finding (FIN) of very low significance was identified for Dominion's failure to provide an adequate procedure for backwashing the Unit 2 condenser water boxes in accordance with procedure MP-05-MMM, "Manuals, Procedures, Guidelines, Handbooks and Forms." Specifically, in implementing the procedure, the 'A' circulating water (CW) pump automatically ramped down to zero speed shortly after securing the 'B' CW pump. This resulted in a loss of condenser vacuum, which caused an automatic turbine trip. The turbine trip caused an automatic reactor trip. Dominion entered the issue into their corrective action program (CAP) and revised the operating procedure (OP) 2325D.

The finding is more than minor because it was similar to NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," Example 4b, in that an inadequate procedure led to a reactor trip. The finding was associated with the Procedure Quality attribute of the Initiating Events cornerstone, and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, Dominion's failure to provide an adequate procedure for backwashing Unit 2 condenser water boxes resulted in the variable frequency drive (VFD) logic securing the only CW pump running in that condenser, and subsequently caused a reactor trip. The finding was of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The inspectors determined that this finding had a cross-cutting aspect in the Human Performance cross-cutting area, Resources component, because Dominion did not provide an accurate and up-to-date procedure for the backwashing of the Unit 2 water boxes. [H.2(c)] (Section 4OA3)

### Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green, NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," in that, Dominion did not take adequate corrective action

Enclosure

following the identification of a degraded condition. Specifically, maintenance personnel identified a broken jacket water fitting (banjo bolt) on the Unit 3, 'B' emergency diesel generator (EDG), but a condition report (CR) was not initiated. Subsequently, an additional similarly degraded fitting resulted in extended unavailability on the Unit 3, 'B' EDG. In response, Dominion entered the issue into the CAP and replaced the broken jacket water fitting.

The finding is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent an actual loss of system safety function of a single train for greater than its Technical Specification (TS) allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a cross-cutting aspect in the Problem Identification and Resolution cross-cutting area, Corrective Action Program component, because Dominion did not ensure that issues potentially impacting nuclear safety were promptly identified, fully evaluated, and that actions were taken to address safety issues in a timely manner, commensurate with their safety significance. Specifically, Dominion did not initiate a CR in September 2009 for a degraded condition on the safety-related Unit 3, 'B' EDG. [P.1(a)] (Section 4OA5)

#### **Other Findings**

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Millstone Unit 3 operated near or at 100 percent power during the inspection period. Millstone Unit 2 began the inspection period operating at 100 percent power. On November 19, 2010, Unit 2 entered a forced shutdown to repair a leaking feedwater vent line to the #2 Steam Generator (SG). Unit 2 returned to 100 percent power on November 22, 2010. On November 28, 2010, Unit 2 tripped due to a loss of condenser vacuum while preparing to backwash the 'B' CW water box. Unit 2 returned to 100 percent power on December 1, 2010. On December 11, 2010, Unit 2 had an unplanned power reduction to 54 percent to repair a tube leak in the 4 'A' feedwater heater, returned to full power on December 15, 2010, and operated at or near 100 percent power for the remainder of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01 - 1 sample)

##### Seasonal Site Inspection

##### a. Inspection Scope

The inspectors reviewed Unit 2 and Unit 3's readiness for seasonal cold weather. The inspectors reviewed selected equipment, instrumentation, and supporting structures to determine if they were configured in accordance with Dominion's procedures, and that adequate controls were in place to ensure functionality of the systems. The inspectors reviewed the Unit 2 and Unit 3 Updated Final Safety Analysis Report (UFSAR) and TSs, and compared the analysis with procedure requirements to ascertain that procedures were consistent with the UFSAR. The inspectors performed partial walkdowns of the Unit 2 EDG, auxiliary steam, and reactor building closed cooling water systems; and condensate surge, condensate storage, refueling water storage, and primary water storage tanks. Partial walkdowns were performed of the Unit 3 intake structure, condensate storage and surge tanks, and heat tracing of safety-related piping to determine if actions required by the cold weather procedure were complete. Documents reviewed during the inspection are listed in the Attachment.

##### b. Findings

No findings were identified.

Enclosure



1R04 Equipment Alignment (71111.04 - 2 samples)Partial System Walkdowns

- Inspection Scope

The inspectors performed two partial system walkdowns during this inspection period. The inspectors performed a walkdown of each system to determine if the critical portions of the selected systems were correctly aligned in accordance with the procedures, and to identify any discrepancies that may have had an effect on operability. The walkdowns included selected switch and valve position checks, and verification of electrical power to critical components. Finally, the inspectors evaluated other elements, such as material condition, housekeeping, and component labeling. Documents reviewed during the inspection are listed in the Attachment. The following systems were reviewed based on their risk significance for the given plant configuration:

Unit 2

- 'A' and 'B' Motor Driven Auxiliary Feedwater (AFW) Pumps when the Turbine Driven AFW Pump Was Out of Service (OOS) for Testing on November 17, 2010; and

Unit 3

- 'A' EDG when the 'B' EDG was OOS for an extended outage on November 15, 2010.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q – 6 samples)a. Inspection Scope

The inspectors performed walkdowns of six fire protection areas. The inspectors reviewed Dominion's fire protection program to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for the selected areas. The inspectors walked down these areas to assess Dominion's control of transient combustible material and ignition sources. In addition, the inspectors evaluated the material condition and operational status of fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors compared the existing conditions of the areas to the fire protection program requirements to determine if all program requirements were being met. Documents reviewed during the inspection are listed in the Attachment. The fire protection areas reviewed included:

Unit 2

- 'A' EDG Fire Area H-7A, Zone A-15;

Unit 3

- 'B' EDG Fire Area EG-4, Zone A;
- East Switchgear Area Fire Area CB-3, Zone N/A;
- Control Building Fire Area CB-1 to 14;
- Station Blackout (SBO) Diesel Generator Enclosure, Fire Area SBO-1; and
- Main Steam Valve Enclosure Building Fire Area MSV-1.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)a. Inspection Scope

The inspectors reviewed the flood protection measures for equipment in the Unit 3 Reactor Plant Component Cooling Water (RPCCW) area. The inspectors evaluated Dominion's protection of safety-related systems from internal flooding conditions. The inspectors performed a walkdown of the area, interviewed the Probabilistic Risk Analyst (PRA) engineer, and reviewed the internal flooding evaluation. Documents reviewed during the inspection are listed in the Attachment.

- Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11 – 3 samples).1 Licensed Operator Requalification (71111.11B – 1 sample)a. Inspection Scope

A review was conducted of recent operating history documentation found in inspection reports, licensee event reports, the licensee's corrective action program, and the most recent NRC plant issues matrix (PIM). The inspectors also reviewed specific events from the licensee's CAP which indicated possible training deficiencies, to verify that they had been appropriately addressed. The senior resident inspector was also consulted for insights regarding licensed operator performance. These reviews did not detect any operational events that were indicative of possible training deficiencies.

For the 2010 examination cycle, the biennial written examinations and annual operating tests administered for weeks three, four, and five were reviewed for content, quality, and excessive overlap to ensure that these exams met the criteria established in the Examination Standards and 10 CFR 55.59.

On January 3, 2011, the results of the 2010 biennial written and annual operating tests for both Unit 2 and Unit 3 were reviewed to determine if pass/fail rates were consistent with the guidance of NUREG-1021, Revision 9, Supplement 1, "Operator Licensing Examination Standards for Power Reactors," and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The review verified the following:

#### Unit 2

- Crew pass rates were greater than 80 percent (Pass rate was 100 percent);
- Individual pass rates on the dynamic simulator test were greater than 80 percent (Pass rate was 100 percent);
- Individual pass rates on the job performance measures of the operating examination were greater than 80 percent (Pass rate was 98.0 percent);
- Individual pass rates on the written examination (2010) were greater than 80 percent (Pass rate was 100 percent);
- More than 75 percent of the individuals passed all portions of the 2010 operating examination (Pass rate was 98.0 percent);

#### Unit 3

- Crew pass rates were greater than 80 percent (Pass rate was 100 percent);
- Individual pass rates on the dynamic simulator test were greater than 80 percent (Pass rate was 100 percent);
- Individual pass rates on the job performance measures of the operating examination were greater than 80 percent (Pass rate was 100 percent);
- Individual pass rates on the written examination (2010) were greater than 80 percent (Pass rate was 98.0 percent); and
- More than 75 percent of the individuals passed all portions of the 2010 operating examination (Pass rate was 98.0 percent).

Observations were made of the Unit 2 dynamic simulator examinations and job performance measures (JPMs) administered during the week of November 1, 2010, for Operations Crew 'D'. These observations included facility evaluations of crew and individual performance during the dynamic simulator examinations and individual performance of JPMs.

The remediation plans for two biennial written exams, one 2009 annual dynamic crew exam failure, several as-found dynamic exam evaluations, and a number of individual cyclic written test failures for Unit 2 were reviewed to assess the effectiveness of the

remedial training. Two Unit 2 license reactivations were reviewed to ensure that 10 CFR 55.53 license conditions and applicable program requirements were met.

Instructors and training/operations management were interviewed for feedback on their training program. Simulator performance and fidelity were reviewed for conformance to the reference plant control room. Selected simulator deficiency reports were reviewed to assess licensee prioritization and timeliness of resolution. Simulator testing records were reviewed to verify that scheduled tests were performed. Samples of nine operator medical examinations were reviewed for compliance with license conditions, including NRC regulations.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Review (71111.11Q – 2 samples)

a. Inspection Scope

The inspectors observed simulator-based licensed operator requalification training for Unit 2 on October 13, 2010, and for Unit 3 on November 2, 2010. The inspectors evaluated crew performance in the areas of clarity and formality of communications; ability to take timely actions; prioritization, interpretation, and verification of alarms; procedure use; control board manipulations; oversight and direction from supervisors; and command and control. Crew performance in these areas was compared to Dominion management expectations and guidelines as presented in OP-MP-100-1000, "Millstone Operations Guidance and Reference Document." The inspectors compared simulator configurations with actual control board configurations. The inspectors also observed Dominion evaluators discuss identified weaknesses with the crew and/or individual crew members, as appropriate. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed two samples of Dominion's evaluation of degraded conditions, involving safety-related structures, systems and/or components for maintenance effectiveness during this inspection period. The inspectors reviewed Dominion's implementation of the "Maintenance Rule," 10 CFR 50.65. The inspectors reviewed Dominion's ability to identify and address common cause failures, the applicable Maintenance Rule scoping document for each system, the current classification of these systems in accordance with 10 CFR 50.65 (a)(1) or (a)(2), and the adequacy of the

performance criteria and goals established for each system, as appropriate. The inspectors also reviewed recent system health reports, CRs, apparent cause determinations, functional failure determinations, operating logs, and discussed system performance with the responsible system engineer. Documents reviewed during the inspection are listed in the Attachment.

The specific systems/components reviewed were:

### Unit 3

- SBO Diesel Generator; and
- Turbine Driven AFW Pump.

#### b. Findings

No findings were identified.

### 1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

#### a. Inspection Scope

The inspectors evaluated online risk management for five emergent and planned activities. The inspectors reviewed maintenance risk evaluations, work schedules, and control room logs to determine if maintenance or surveillance activities adversely affected the plant risk already incurred with out-of-service (OOS) components. The inspectors evaluated whether Dominion took the necessary steps to control work activities, minimize the probability of initiating events, and maintain the functional capability of mitigating systems. The inspectors assessed Dominion's risk management actions during plant walkdowns. Documents reviewed during the inspection are listed in the Attachment. The inspectors reviewed the conduct and adequacy of risk assessments for the following maintenance and testing activities:

### Unit 2

- High Work Risk associated with the installation of UAC3 Bypass Power and Testing of the VR-11 Static Switch the week of October 4, 2010;
- Dominion planning and control of emergent work during troubleshooting activities on VR-11 from October 25, 2010, through October 29, 2010;
- Yellow Risk associated with the 'A' High Pressure Safety Injection (HPSI) pump and HPSI valve stroke time surveillances on November 4, 2010;
- Risk assessment of emergent work to backwash 'C' CW pump which temporarily rendered 'B' and 'C' SW pumps inoperable with 'A' EDG inoperable on December 23, 2010; and

Unit 3

- December 6, 2010, potential Orange risk due to High Trip risk and the 'B' AFW pump being OOS, however, Dominion recognized the scheduling issue and postponed work in the 'F' intake bay until the 'B' AFW pump was returned to service eliminating the High Trip risk component.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15 – 6 samples)a. Inspection Scope

The inspectors reviewed six operability determinations (OD). The inspectors evaluated the ODs against the guidance contained in NRC Regulatory Issue Summary 2005-20, Revision to Guidance Formerly Contained in NRC Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability." The inspectors also discussed the conditions with operators and engineers, as necessary. Documents reviewed during the inspection are listed in the Attachment. The inspectors reviewed the adequacy of the following evaluations of degraded or non-conforming conditions:

Unit 2

- CR397817, 'A' EDG Damaged Fuse Holder for the Automatic and Manual Voltage Regulators;
- ODM, 2-FW-261B, #2 SG Feedwater Header Vent Leak Inside Containment;

Unit 3

- ODM 000170, Operation of 3CHS\*V368 Failed Open;
- CR401027, 3SWP\*AOV39A Valve Body, Disc and Seat Retainer Ring Erosion;
- CR403794, 3EGF\*TRS1A Fuel Oil Transfer Pump Breaker Failed Over Current Trip Test; and
- CR398186, Non-QA part installed in 'C' CHS pump.

b. Findings

No findings were identified.

Enclosure

1R18 Plant Modifications (71111.18 – 1 sample)a. Inspection Scope

To assess the adequacy of the temporary leak repair (encapsulation) of 2-FW-261B, #2 SG feedwater vent valve temporary modification, the inspectors performed walkdowns of the work site, interviewed plant staff, and reviewed applicable documents, including procedures, calculations, modification packages, engineering evaluations, drawings, corrective action program documents, the UFSAR, and TS.

For the modification reviewed, the inspectors determined whether selected attributes (component safety classification and seismic qualification), were consistent with the design and licensing bases. Design assumptions were reviewed to verify that they were technically appropriate and consistent with the UFSAR. For this temporary modification, the equivalency evaluation was reviewed. The inspectors also verified that procedures and calculations were properly updated with revised design information. In addition, the inspectors verified that the as-built configuration was accurately reflected in the design documentation, and that post-modification testing was adequate to ensure the structures, systems, and components would function properly. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 2 samples)a. Inspection Scope

The inspectors reviewed post-maintenance test (PMT) activities to determine whether the PMT adequately demonstrated that the safety-related function of the equipment was satisfied, given the scope of the work specified, and that operability of the system was restored. In addition, the inspectors evaluated the applicable test acceptance criteria to evaluate consistency with the associated design and licensing bases, as well as TS requirements. The inspectors also evaluated whether conditions adverse to quality were entered into the CAP for resolution. Documents reviewed during the inspection are listed in the Attachment. The following maintenance activities and PMTs were evaluated:

Unit 2

- OP 2346A, 'A' EDG, "Revision 027-11 following Troubleshooting and Corrective Maintenance on the 'A' EDG on October 5, 2010;" and

Unit 3

- OP 3346A, 'B' EDG, "Revision 024-04 Following EDG Overhaul and Corrective Maintenance on November 16, 2010."

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)a. Inspection Scope

On November 19, 2010, Unit 2 conducted a plant shutdown and entered a forced outage to temporary leak repair (encapsulate) 2-FW-261B, #2 SG feedwater vent valve, which had a body to bonnet leak. The inspectors evaluated the outage plan and outage activities to confirm that Dominion had appropriately considered risk, had developed risk reduction and plant configuration control methods, had adhered to license and TS requirements, and had taken appropriate corrective action prior to start-up. The inspectors observed the shutdown, portions of the cooldown, the reactor start-up, and portions of the power ascension activities. The inspectors verified that conditions adverse to quality identified during the outage were entered into the CAP. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 3 samples)a. Inspection Scope

The inspectors reviewed surveillance activities to determine whether the testing adequately demonstrated equipment operational readiness and the ability to perform the intended safety-related function. The inspectors attended pre-job briefings, reviewed selected prerequisites and precautions to determine if they were met, and observed the tests to determine whether they were performed in accordance with the procedural steps. Additionally, the inspectors reviewed the applicable test acceptance criteria to evaluate consistency with associated design bases, licensing bases, and TS requirements; and that the applicable acceptance criteria were satisfied. The inspectors also evaluated whether conditions adverse to quality were entered into the CAP for resolution. Documents reviewed during the inspection are listed in the Attachment. The following surveillance activities were evaluated:



Unit 2

- EN 21054, "Spent Fuel Rack Boraflex Monitoring," Revision 002-05;
- SP 2620A-001, "CEA Partial Movement," Revision 009-00; and

Unit 3

- SP 3601F.5, "Reactor Coolant Valve Operability, Section 8 PORV Block Valve Stroke Testing," Revision 010-01.

b. Findings

No findings were identified.

**2. RADIATION SAFETY****Cornerstone: Public and Occupational Radiation Safety****2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01 – 1 sample)**a. Inspection Scope

During the period November 15, 2010 through November 18, 2010, the inspectors conducted the following activities to verify that Dominion was evaluating, monitoring, and controlling radiological hazards for work performed in locked high radiation areas (LHRA), other radiological controlled areas, and that workers were adhering to these controls when working in these areas. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, TSs, and with Dominion procedures.

Radiological Hazards Assessment

The inspectors reviewed recently implemented corporate procedures that replaced site procedures regarding various radiation protection processes, including radiological postings, access controls for high and very high radiation areas, dose mitigation measures, and personnel contamination monitoring. The inspectors determined that the new procedures did not reduce the scope or effectiveness of previously established radiological controls.

Radiological Hazards Control and Work Coverage

The inspectors toured accessible radiological controlled areas in Unit 2 and Unit 3, including the fuel handling buildings and auxiliary buildings, to confirm the accuracy of survey data and the adequacy of postings and radiation work permits (RWP). The inspectors reviewed survey maps for areas toured to determine the timeliness of survey data and the adequacy of RWP controls.

Enclosure

### Contamination and Radioactive Material Control

The inspectors observed workers surveying and releasing potentially contaminated materials for unrestricted use. The inspectors verified that the counting instrumentation was located in a low background area and that the instruments sensitivity was appropriate for the type of contamination being measured.

### Problem Identification and Resolution

Relevant CRs, associated with radiological controls, and electronic dosimeter dose/dose rate alarm reports initiated from September 2010 through November 2010, were reviewed and discussed with Dominion staff to determine if the follow-up activities were being performed in an effective and timely manner, commensurate with their safety significance.

#### b. Findings

No findings were identified.

### 2RS05 Radiation Monitoring Instrumentation (71124.05 – 1 sample)

#### a. Inspection Scope

During the period November 15, 2010 through November 18, 2010, the inspectors performed the following activities to evaluate the operability and accuracy of radiation monitoring instrumentation used to ensure a safe work environment, and to detect and quantify radioactive process streams and effluent releases. Implementation of these programs was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and with Dominion procedures.

### Walkdown of Process and Effluent Monitoring Systems

The inspectors, with the assistance of cognizant Plant Systems Engineers and the I&C Supervisor, walked down selected portions of the liquid and gaseous monitoring systems installed in Unit 2 and Unit 3 to assess material condition and the status of system upgrades.

In Unit 2, the walkdown included portions of the following monitors:

- Fuel Handling Building, RM-8145;
- Radwaste Building, RM-8999;
- Containment Air Monitors, RM-8262 A/B;
- Waste Gas Tank Monitor, RM-9095;
- Clean Liquid Waste Effluent Monitor, RM-9049;
- Aerated Liquid Waste Effluent Monitor, RM-9116;

Enclosure

- Ventilation Vent Monitor, RM-8132 A/B; and
- Control Room Area Monitor, RM-7899.

In Unit 3, the walkdown included portions of the following monitors:

- Ventilation Vent Monitor, RE-10A/B;
- SCLRS Monitor, RE 19A/B;
- Engineered Safeguards Building Monitor, RE-49;
- Containment Air Monitor, CMS-22;
- Control Room Ventilation Monitor, RE-16A/B;
- Condenser Air Ejector, RE-21;
- Process Gas Monitor, RE-48;
- Turbine Building Sump Monitor, RE-50;
- Liquid Waste Effluent Monitor, RE-70; and
- Waste Neutralization Sump Monitor, RE-07.

#### Calibration of Portable Survey Instruments, Area Monitors, Electronic Dosimeters and Air Samplers

The inspectors reviewed the operating procedures, calibration reports, and current source activities/dose rate characterizations for the Shepherd Model 89 calibrators (Nos. 9068 and 9155) used for calibrating survey instruments and electronic dosimeters.

The inspectors reviewed the calibration records for selected survey meters, electronic dosimeters, and contamination monitors including small article monitors (SAM) (SAM 9, SAM-11, SAM-12), personal contamination monitors (ARGOS 4A/B & PM-7), portable instruments (RO-2), electronic dosimeters (Siemens), and laboratory counting instruments (SAC-4, BC-4).

The inspectors observed technicians performing an electronic/source calibration of an area monitoring instrument (AMP-100), and daily operational checks of various instruments including contamination monitors (SAM-9, SAM-11, & SAM-12), various hand held survey instruments (RO-2), and personnel contamination monitors (ARGOS - 4 A/B, PM-7). The inspectors reviewed daily quality control data for counting room instruments (SAC-4, BC-4). The inspectors confirmed that procedural requirements were met and that the instruments had the required accuracy.

During walkdowns in various plant areas, the inspectors confirmed that available monitoring instruments were calibrated, that daily source checks had been performed, and that the instruments were operational. Instruments checked included handheld survey instruments, electronic dosimeters, air monitors, and contamination monitors.

The inspectors reviewed contamination sampling results (10 CFR 61 radionuclide analyses) used to characterize difficult-to-measure radioisotopes, to determine if the calibration sources were representative of the radioisotopes found in the plant's source term. Whole-body counting system records and contamination monitor setpoints were

Enclosure

reviewed to determine if this data was incorporated in the system setup to ensure that difficult-to-measure radioisotopes were accounted for when making measurements.

#### Laboratory Instrumentation

The inspectors reviewed the calibration records, daily source checks, and maintenance records for selected gamma spectroscopy systems (Unit 2 Detectors Nos 1, 2, 3, 4, 7, and 8; and Unit 3 detectors Nos. 11, 12, 13, 15, and 16) and scintillation counters (Packard TriCarb Nos. 422931 & 422932) to verify that the instruments were calibrated and properly maintained. The inspectors confirmed that the check sources used aligned with the plant's isotopic mix.

#### Whole Body Counters

The inspectors reviewed the calibration, daily quality control data, and operating procedure for the FastScan whole body counting system. The inspectors determined that appropriate radioactive source phantoms were used in performing calibrations, and that calibration sources were representative of radioisotopes found in the plant's source term.

#### Plant Process and Post-Accident Monitoring Instrumentation

The inspectors reviewed the calibration records for liquid and gaseous effluent instruments installed in Unit 2 and Unit 3. Records reviewed included the high range containment radiation monitors, waste liquid discharge monitors, plant vent wide range monitors, incore seal table area monitors, and control room rad monitors. The inspectors determined that the electronic and radiation source calibrations were appropriately conducted, and that the alert and high alarm setpoints were properly established.

#### Problem Identification and Resolution

The inspectors reviewed selected CRs, system health reports, and various Nuclear Quality Assurance reports to evaluate Dominion's threshold for identifying, evaluating, and resolving problems for the radiation monitoring instrumentation. Included in this review were CRs related to radiation worker and radiation protection technician errors to determine if an observable pattern traceable in the maintenance or use of radiation instruments was evident.

b. Findings

No findings were identified.

Enclosure

#### 4. OTHER ACTIVITIES [OA]

##### 4OA1 Performance Indicator (PI) Verification (71151)

##### .1 Cornerstone: Mitigating Systems (2 samples)

##### a. Inspection Scope

The inspectors reviewed Dominion submittals for the PIs listed below to verify the accuracy of the data reported during that period. The PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," were used to verify the basis for reporting each data element. The inspectors reviewed portions of the operations logs, monthly operating reports, and LERs; and discussed the methods for compiling and reporting the PIs with cognizant licensing and engineering personnel. Documents reviewed during the inspection are listed in the Attachment.

##### Unit 2

- Safety System Functional Failures [MS05]; and

##### Unit 3

- Safety System Functional Failures [MS05].

##### b. Findings

No findings were identified.

##### .2 Occupational Exposure Control Effectiveness (1 sample)

##### a. Inspection Scope

The inspectors reviewed implementation of Dominion's Occupational Exposure Control Effectiveness Performance Indicator Program. Specifically, the inspectors reviewed dosimetry alarm reports, CRs, and associated documents for occurrences involving locked high radiation areas, very high radiation areas, and unplanned exposures against the criteria specified in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify that all occurrences that met the NEI criteria were identified and reported as performance indicators. The period covered in this review was October 2009 through October 2010. This inspection activity represents the completion of one sample relative to this inspection area; completing the annual inspection requirement.

##### b. Findings

No findings were identified.

Enclosure

.3 RETS/ODCM Radiological Effluent Occurrences (1 sample)

a. Inspection Scope

The inspectors reviewed Unit 2 and Unit 3 effluent release reports for the period October 2009 through October 2010, for issues related to the public radiation safety performance indicator as specified in NEI 99-02 "Regulatory Assessment Performance Indicator Guideline." The NEI criteria for reporting performance indicator data includes radiological effluent release occurrences that exceed 1.5 millirem (mrem)/quarter whole body or 5.0 mrem/quarter organ dose for liquid effluents; 5 millirads (mrads)/quarter gamma air dose; 10 mrad/quarter beta air dose; and 7.5 mrads/quarter for organ dose for gaseous effluents. This inspection activity represents the completion of one sample relative to this inspection area; completing the annual inspection requirements. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into Dominion's CAP. This was accomplished by reviewing the description of each new CR and attending daily management review committee meetings. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

.2 Semi-Annual Problem Identification & Resolution (PI&R) Trend Review (1 sample)

a. Inspection Scope

As required by Inspection Procedure 71152, the inspectors performed a review of the Dominion corrective action program, PIs, and associated documents to identify trends that may indicate existence of safety significant issues. The inspectors review was focused on repetitive equipment and corrective maintenance issues, but also considered the results of daily inspector corrective action program item screening.

b. Assessments and Observations

No findings were identified.

Dominion's root cause evaluation (RCE001025) on late and deferred preventive maintenance items (PMs) determined that Millstone is not meeting industry standards for deferred PMs and PMs that are past due. Dominion frequently performs PMs late in the grace period and has PMs that have exceeded their 25 percent grace period. The RCE has assigned corrective actions to improve performance in these areas. Work control has identified focus areas to improve their performance. There are plans to develop cycle plans for the major equipment and then align equipment PMs to match the cycle plan. Additionally, there are plans to make the work order routing process more efficient by enhancing Maximo to allow parallel routing of work orders. The inspectors also identified that temporary modifications that require an outage to correct are not being tracked, and as a result, there are temporary modifications that have been in service for several years without a permanent resolution.

4OA3 Event Follow-up (71153 – 3 samples)

.1 Unit 2 Reactor Trip Due to Loss of All Circulating Water to a Waterbox

a. Inspection Scope

On November 28, 2010, at 3:15 p.m., Unit 2 experienced a loss of all circulating water (CW) supply to the 'A' condenser due to an automatic ramp down of the 'A' CW pump shortly after the 'B' CW pump was secured for 'B' water box backwashing. The loss of both CW pumps caused a decrease in condenser vacuum which resulted in a turbine trip. The turbine trip caused an automatic reactor trip. All safety systems functioned as expected.

The inspectors responded to the control room and evaluated the adequacy of operator actions in accordance with approved procedures and TS requirements. The inspectors performed walkdowns of the control room and interviewed personnel to verify that the plant was stable. The inspectors also reviewed the sequence of events information in order to determine if there were any other plant or equipment anomalies.

The inspectors observed the reactor start up and portions of the power ascension. The inspectors reviewed CRs to ensure conditions adverse to quality were entered into Dominion's CAP for resolution.

b. Findings

Introduction: A self-revealing finding (FIN) of very low safety significance (Green) was identified for Dominion's failure to provide an adequate procedure for backwashing of the Unit 2 condenser water boxes in accordance with procedure MP-05-MMM, "Manuals, Procedures, Guidelines, Handbooks, and Forms." Specifically, in implementing the procedure, the 'A' CW automatically ramped down to zero speed by variable frequency

Enclosure

drive (VFD) logic shortly after securing the 'B' CW pump. This resulted in a loss of condenser vacuum, which resulted in a turbine trip. The turbine trip caused an automatic reactor trip.

Description: On November 28, 2010, Unit 2 operations personnel were preparing to backwash the 'B' condenser water box. The operator pushed the 'B' CW pump stop pushbutton, and then closed the 'A' and 'B' water box outlet valves as directed by procedure OP 2325D, "Backwashing Operations," which caused the 'A' CW to ramp down to zero speed. The loss of both CW pumps in the 'A' condenser resulted in a loss of condenser vacuum, which caused an automatic turbine trip. The turbine trip caused an automatic reactor trip.

A review of the events determined that while performing procedure OP 2325D prior to the VFD modification, the operator stopped the CW pump by taking the hand switch to stop, which opened the pump breaker. The procedure was modified in October 2009 as a result of the CW pump VFD modification to instruct the operator to stop the CW pump by pushing the CW pump stop button. In the VFD mode, this caused the pump to slowly ramp down to zero speed. The revision to OP 2325D did not include a caution about the VFD ramp down time when securing a CW pump. Instead, after pressing the CW pump stop button, the procedure stated to close both water boxes' outlet valves without delay to maximize backwash time. By shutting the water box outlet valves while the 'B' CW pump speed was ramping down, the 'A' CW system logic saw no discharge path for the pump (i.e. 'B' CW pump running and both water box discharge valves shut) and automatically ramped down the 'A' CW pump.

Analysis: The inspectors determined that Dominion's failure to provide an adequate procedure for backwashing the Unit 2 water boxes in accordance with procedure MP-05-MMM, "Manuals, Procedures, Guidelines, Handbooks, and Forms," was a performance deficiency. The cause was reasonably within Dominion's ability to foresee and correct, and should have been prevented. Traditional enforcement does not apply since there were no actual safety consequences, impacts on the NRC's ability to perform its regulatory function, or willful aspects to the finding. The finding is more than minor because it was similar to NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," Example 4b, in that an inadequate procedure led to a reactor trip. The finding was associated with the Procedure Quality attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, Dominion's failure to provide an adequate procedure for backwashing the Unit 2 condenser water boxes resulted in the VFD logic securing the only CW pump running in that condenser and, subsequently, caused a reactor trip. The inspectors conducted a Phase 1 screening in accordance with NRC Inspection Manual Chapter (IMC) Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the finding was of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

Enclosure



The inspectors determined that this finding had a cross-cutting aspect in the Human Performance cross-cutting area, Resources component, because Dominion did not provide an accurate and up-to-date procedure for the backwashing of the Unit 2 water boxes. [H.2(c)]

Enforcement: This finding does not involve enforcement action because no regulatory requirement violation was identified. Dominion entered this issue into their CAP (CR405377) and has revised procedure OP 2325D. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as a finding. (FIN 05000336/2010005-01, Failure to Provide an Adequate Procedure for Backwashing Condenser Water Boxes Results in Reactor Trip).

.2 (Closed) LER 05000423/2010-002 Millstone Unit 3 Automatic Reactor Trip on Low-Low 'C' Steam Generator Water Level

a. Inspection Scope

On May 17, 2010, an automatic reactor trip occurred on Millstone Unit 3 while the unit was in Mode 1 at 17 percent power during a reactor start up following a refueling outage. The reactor trip occurred when level on the 'C' SG exceeded the low level trip set point. The operators had taken manual control of all four feed regulating bypass valves (FRBV) after the automatic feedwater control system had been unable to control SG levels. When the operator attempted to slowly throttle the feed rate to the 'C' SG, the 'C' FRBV spuriously closed. The operator was unable to restore SG level and establish stable control before the reactor trip occurred.

The inspectors responded to the control room and evaluated the adequacy of operator actions in accordance with approved procedures and TS requirements. The inspectors performed walkdowns of the control room and interviewed personnel to verify that the plant was stable. The inspectors also reviewed the sequence of events information in order to determine if there were any other plant or equipment anomalies. The inspectors reviewed the root cause evaluation prepared by Dominion.

The inspectors observed the reactor start up and portions of the power ascension. The inspectors reviewed the condition reports and associated root cause report to ensure conditions adverse to quality were entered for resolution in the corrective action system. This issue was previously documented in NRC Inspection Report 05000423/2010003 as a Green finding. The LER was reviewed and no additional findings were identified. This LER is closed.

.3 (Closed) LER 05000423/2010-004 Millstone Unit 3 Inoperable Turbine Driven Auxiliary Feedwater Pump due to Degraded Relief Valve

a. Inspection Scope

On August 21, 2010, while operating in Mode 1 at 100 percent power, the turbine driven auxiliary feedwater (TDAFW) pump was declared inoperable during surveillance test "SP 3622.3," when suction relief valve 3FWA\*RV45 began leaking by its seat. Further investigation revealed that this condition had first existed on June 30, 2010, but had not been identified during that surveillance test resulting in an extended period of inoperability of the TDAFW pump in excess of the allowable outage time in TS 3.7.1.2. Dominion determined the TDAFW pump was available to perform its safety function for the entire period of time.

The inspectors evaluated the adequacy of Dominion's response in accordance with approved procedures and TS requirements. The inspectors observed the repair and retest of 3FWA\*RV45 and the restoration of the TDAFW pump to an operable status. The inspectors also reviewed the root cause evaluation prepared by Dominion. The enforcement aspects of this finding are discussed in Section 4OA7. The inspectors reviewed the condition reports and the LER. This LER is closed.

4OA5 Other Activities

.1 Follow up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period (92723)

a. Inspection Scope

The inspectors performed a follow-up inspection for three Severity Level (SL) IV Traditional Enforcement violations in the area of willfulness that were investigated by the NRC in 2009. The violations involved three separate incidents at Millstone Power Station in which contract personnel for which Dominion had responsibility deliberately falsified information. The results of the NRC's investigations of these matters were documented in two letters to Dominion dated September 10, 2009, and December 14, 2009.

The objectives of the inspection were to determine whether Dominion:

- Provided assurance that the cause(s) of the SL IV Traditional Enforcement violations were understood;
- Provided assurance that the extent of condition and extent of cause of the SL IV Traditional Enforcement violations were identified; and
- Provided assurance that corrective actions for Traditional Enforcement violations were sufficient to address the cause(s).

The inspectors reviewed Dominion's collective significance evaluation for the violations and examined other CAP documents and supporting information. The inspectors also interviewed management and staff personnel who were familiar with the violations or participated in the evaluation and corrective actions. Documents reviewed during the inspection are listed in the Attachment.

b. Findings and Observations

The inspectors concluded that Dominion completed an adequate common cause evaluation that used a systematic method to identify the causes of the Traditional Enforcement violations. Dominion considered the primary common cause to be misjudgment, due in part to personnel not being fully aware of the significance of their actions.

The inspectors determined the station adequately assessed the extent of condition and extent of cause of the violations. Dominion's evaluation also considered other areas where similar conditions or causal factors may have existed.

The inspectors concluded that Dominion's corrective actions were sufficient to address the common cause of misjudgment. The inspectors noted that the primary focus of the corrective actions was to create additional awareness of the significance and consequence of willful misconduct. The planned corrective actions addressed the causes described in the evaluation. However, the inspectors identified two observations related to the implementation of the corrective actions.

First, the station did not properly implement a corrective action intended to raise awareness of willful misconduct for station personnel. The corrective action stated in the collective significance evaluation was to publish a communication from senior management to station personnel on standards, expectations, and consequences related to willful misconduct. The actual communication published in June 2010 did not indicate it was from senior management, and provided a minimal amount of information on standards and expectations. As published, it did not meet the intent of raising awareness. In November 2010, following the inspection activities, Millstone published a revised station communication from the Site Vice President that clearly articulated the standards, expectations, and consequences associated with willful misconduct. The inspectors determined that this issue was minor.

Secondly, the station's implementation of corrective actions intended to raise awareness for vendor management in the area of willful misconduct was limited in scope, and some vendors were not included. The inspectors determined that this issue was minor.

.2 (Closed) Unresolved Item 05000423/2010006-01, Broken Jacket Water Banjo Bolt Adversely Affected 3'B' EDG Operability (71152)

a. Inspection Scope

In February 2010, a degraded jacket water fitting (banjo bolt) on the 3'B' EDG resulted in extended EDG unavailability when a significant jacket water (JW) system leak

occurred during EDG testing. The details of this issue were previously identified and documented in the 2010 NRC Problem Identification and Resolution team inspection report, 05000336,423/2010006. In this report, the NRC opened Unresolved Item (URI) 05000423/2010006-01 to track Dominion's additional actions that were needed to fully evaluate and characterize the potential performance deficiency.

To close URI 05000423/2010006-01, the inspectors reviewed the details associated with the February 2010 issue and Dominion's subsequent evaluation. The inspectors also reviewed additional CAP documents to evaluate Dominion's apparent cause and extent of condition review (CR 370566).

b. Findings

Introduction: The inspectors identified a Green, NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," in that Dominion did not take adequate corrective actions for a condition adverse to quality involving an unanticipated failure discovered during maintenance on the 3'B' EDG. Specifically, maintenance workers identified a broken JW banjo bolt on the No. 13 cylinder in September 2009; however, they did not initiate a CR for the issue. Subsequently, a similarly degraded JW banjo bolt on the No. 3 cylinder resulted in extended unavailability of the 3'B' EDG in February 2010.

Description: On July 22, 2009, Dominion initiated CR 343051 to address minor JW leakage from the No. 13 cylinder on the 3'B' EDG. Dominion estimated the leak rate at approximately 60 drops per minute and determined that it did not have the potential to impact EDG operability. Dominion closed the CR to work order (WO) 53102270827. On September 22, 2009, operators tagged out the 3'B' EDG for preventive maintenance on the service water side of the JW heat exchangers (WO 53102241548). Maintenance completed the planned work on the EDG and operators completed their pre-job briefing for EDG post-maintenance testing. As operators were clearing tags and aligning the EDG for testing, maintenance workers reported that during the performance of EDG minor maintenance (WO 53102283391) to check the leak tightness of the No. 13 cylinder banjo bolt, they had discovered that the gasket appeared crushed or the JW fitting could be possibly cracked. The operators recommended that an immediate repair be pursued. Since the JW banjo bolt tightness check was performed as minor maintenance and was not planned, there were no contingency parts on hand and a corrective maintenance WO was not ready in case of scope expansion. The emergent failure required draining the JW system and resulted in extending 3'B' EDG unavailability (although still within the TS allowed outage time). On September 22, 2009, maintenance workers repaired the JW leak by replacing a degraded banjo bolt on the No. 13 cylinder (WO 53102270827). Maintenance documented an "unanticipated failure" of the broken banjo bolt in the WO package. Operations and maintenance supervision reviewed and closed WO 53102270827 with no additional actions.

On February 11, 2010, operations noted excessive JW leakage from the No. 3 cylinder during a 3'B' EDG monthly test, immediately declared the EDG inoperable, performed a controlled shutdown of the EDG, and initiated CR 368610. NRC inspectors walked down the 3'B' EDG shortly after it was shut down and noted that operations had made

Enclosure

an appropriate operability call based upon the amount of water that had leaked and the magnitude of the JW leak rate after the EDG had been shutdown. Dominion determined that the JW leak was from a cracked banjo bolt, which resulted in about twenty hours of unplanned 3'B' EDG unavailability. Maintenance replaced the banjo bolt on the No. 3 cylinder, and operations declared the EDG operable on February 12, 2010. On February 22, 2010, maintenance replaced all the banjo bolts on the 3'B' EDG, resulting in approximately ten hours of additional unavailability. On February 23, 2010, preliminary results from a magnetic particle inspection of the banjo bolts removed from the 3'B' EDG revealed seven additional cracked bolts (CR 369856). On February 23, 2010, maintenance replaced all the banjo bolts on the redundant 3'A' EDG to address the extent-of-condition. Dominion's initial review of the banjo bolts removed from 3'A' EDG did not identify any degraded bolts similar to those removed from 3'B' EDG.

The inspectors noted that Dominion took prompt and appropriate corrective actions following the emergent banjo bolt failure on February 11, 2010; however, the inspectors identified that Dominion had not initiated a CR in September 2009 when they had identified the first failed banjo bolt. The inspectors noted that this represented a missed opportunity to evaluate the deficiency within Dominion's CAP, and may have precluded the emergent 3'B' EDG unavailability in February 2010. Specifically, Dominion procedure PI-AA-200, "Corrective Action," listed examples of conditions that require a CR, several of which were applicable to the "unanticipated failure" of the banjo bolt, including 1) deficiencies or adverse conditions identified during performance of work, 2) a component failure that is outside of what would normally be expected, and 3) documentation of equipment failures. If Dominion had evaluated the banjo bolt failure within their CAP, they may have inspected a sample of banjo bolts and/or proactively replaced all the banjo bolts on 3'B' EDG during a planned December 2009 work window.

Dominion initiated CR 370566 for not identifying the degraded JW banjo bolt condition in the CAP in September 2009, and to evaluate potential generic concerns in this area. The inspectors reviewed Dominion's analysis following the failed banjo bolt in February 2010, and determined that the analysis was acceptable. Dominion determined the failure mechanism was related to a chemical cleaning to remove fuel oil contamination of the JW system, performed in 1996 only on the 3'B' EDG. Specifically, residual chemicals became trapped in the low flow annular area of the banjo bolts that led to a slow inter-granular attack of the bolting. None of the banjo bolts associated with 3'A' EDG were found with similar degradation.

Analysis: The inspectors determined that the failure to take adequate corrective action following identification of a degraded condition (broken banjo bolt) was a performance deficiency that was reasonably within Dominion's ability to foresee and prevent. This issue is similar to the more than minor example, 4.f, of IMC 0612, Appendix E, "Examples of Minor Issues." Specifically, the degraded condition subsequently adversely impacted EDG operability. Additionally, the finding was more than minor because it impacted the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Traditional enforcement does not apply because

Enclosure

prevent undesirable consequences. Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function, and was not the result of any willful violation of NRC requirements.

In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," a Phase 1 SDP screening was performed and determined the finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent an actual loss of system safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

This finding had a cross-cutting aspect in the Problem Identification and Resolution cross-cutting area, Corrective Action Program component, because Dominion did not ensure that issues potentially impacting nuclear safety were promptly identified, fully evaluated, and that actions were taken to address safety issues in a timely manner, commensurate with their safety significance. Specifically, Dominion did not initiate a CR in September 2009 for a degraded condition on the safety-related Unit 3, 'B' EDG. [P.1(a)]

**Enforcement:** 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, from September 22, 2009, to February 11, 2010, Dominion did not take adequate corrective action to identify and correct an unanticipated failure of a JW banjo bolt prior to the condition adversely impacting 3'B' EDG operability. Dominion maintenance workers replaced all the banjo bolts on the 3'B' EDG. Because this issue is of very low safety significance (Green) and because it is entered into Dominion's CAP (CR 370566), the NRC is treating this finding as an NCV, consistent with Section 2.3.2 of the NRC's Enforcement Policy. **(NCV 05000423/2010005-02, Failure to Take Adequate Corrective Actions for a Broken JW Banjo Bolt on the 3B EDG).**

#### 4OA6 Meetings, Including Exit

##### Exit Meeting Summary

On January 4, 2011, the resident inspectors presented the overall inspection results to Mr. A. J. Jordan and members of his staff. The inspectors confirmed that no proprietary information was provided or examined during the inspection.

#### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements, which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

Enclosure

- TS 3.7.2.1 states that the TDAFW pump has an allowable outage time of 72 hours. TS 4.0.1 requires that the licensee shall declare the TDAFW pump to be inoperable if the pump fails a surveillance test required by TSs. Contrary to this requirement, the TDAFW pump failed a surveillance test on June 30, 2010, and was inoperable for a period of approximately 54 days, which exceeded the TS allowable outage time. Dominion was not aware of the surveillance test failure until an extent of condition review triggered by another failed surveillance test on August 19, 2010, revealed that the TDAFW pump had failed the earlier test. Upon discovery, Dominion restored operability by repairing 3FWA\*RV45 and placed the condition in the CAP (CR392003 and CR392155). This finding is of very low safety significance because the TDAFW pump was available to fulfill its safety function during the period of time that it was inoperable.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Dominion personnel

L. Armstrong	Manager, Training
G. Auria	Nuclear Chemistry Supervisor
B. Barron	Manager, Nuclear Oversight
B. Bartron	Supervisor, Licensing
C. Chapin	Supervisor, Nuclear Shift Operations Unit 2
F. Cietek	Nuclear Engineer, PRA
T. Cleary	Licensing Engineer
G. Closius	Licensing Engineer
L. Crone	Supervisor, Nuclear Chemistry
J. Curlin	Manager, Protection Services
J. Dorosky	Health Physicist III
M. Finnegan	Supervisor, Health Physics, ISFSI
A. Gharakhanian	Nuclear Engineer III
W. Gorman	Supervisor, Instrumentation & Control
J. Grogan	Assistant Operations Manager
K. Grover	Manager, Operations
C. Houska	I&C Technician
A. Jordan	Site Vice President
J. Kunze	Supervisor, Nuclear Operations Support
J. Laine	Manager, Radiation Protection/Chemistry
R. MacManus	Director, Nuclear Station Safety & Licensing
G. Marshall	Manager, Outage and Planning
J. Plourde	Nuclear Engineer III
R. Riley	Supervisor, Nuclear Shift Operations Unit 3
M. Roche	Senior Nuclear Chemistry Technician
M. Sartain	Director, Engineering
L. Salyards	Licensing, Nuclear Technology Specialist
J. Semancik	Plant Manager
A. Smith	Asset Management
D. Smith	Manager, Emergency Preparedness
S. Smith	Manager, Engineering
J. Stoddard	Shift Manager, Unit 3
S. Turowski	Supervisor, Health Physics Technical Services
C. Vournazos	IT Specialist, Meteorological Data



## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Closed

URI	05000423/2010006-01	Broken Jacket Water Banjo Bolt Adversely Affected EDG 3'B' Operability (Section 4OA5)
LER	05000423/2010-002	Automatic Reactor Trip on Lo Lo 'C' Steam Generator Water Level (Section 4OA3)
LER	05000423/2010-004	Inoperable Turbine Driven Auxiliary Feedwater Pump due to Degraded Relief Valve (Section 4OA3)

### Opened and Closed

FIN	05000336/2010005-01	Failure to Provide an Adequate Procedure for Backwashing Condenser Water Boxes (Section 4OA3)
NCV	05000423/2010005-02	Failure to Take Adequate Corrective Actions For a Broken Jacket Water Banjo Bolt on the 3'B' EDG (Section 4OA5)

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

COP 200.13, "Cold Weather Preparations," Revision 003-04  
 OP 2326A, "Service Water System," Revision 023-07  
 OP 2331, "Plant Heating and Condensate Recovery System," Revision 006-09  
 OP 2350, "Refueling Water Storage Tank Temperature Control," Revision 014-04  
 OP 3314G, "Intake Structure Ventilation," Revision 009-06  
 OP 3352, "Heat Tracing," Revision 013-05  
 CR395912  
 CR396442  
 CR397146  
 CR402831  
 CR402952  
 CR403002  
 CR403091  
 CR403414

### **Section 1R04: Equipment Alignment**

OP 2322-01, "Auxiliary Feedwater System Lineup," Revision 000-01  
 OP3346A, "EDG," Revision 024-04  
 OP3346A Form 001, "EDG 'A' Cooling Water Valve Line Up," Revision 007

OP3346A Form 003, "EDG 'A' Lube Oil Valve Line Up," Revision 006-01  
OP3346A Form 005, "EDG 'A' Starting Air Valve Line Up," Revision 008-04  
OP3346A Form 007, "EDG 'A' Crank Case Vacuum Valve Line Up," Revision 005  
OP3346A Form 009, "EDG 'A' Instrument Valve Lineup," Revision 006-01  
OP3346A Form 011, "EDG 'A' Electrical Line Up," Revision 009-01  
OP3346B, Diesel Fuel Oil," Revision 101-03  
OP3346B Form 001, "Valve Line Up for 'A' Diesel Fuel System," Revision 4  
OP3346B Form 003, "A' Diesel Fuel Oil Instrument Valve Line Up," Revision 4  
OP3346B Form 006, "A' Diesel Fuel Oil Electrical Alignment," Revision 000-01

**Section 1R05: Fire Protection**

Millstone Unit 2 Fire Hazards Analysis, Revision 9  
Millstone Unit 3 Firefighting Strategies, Revision 2  
Millstone Unit 3 Fire Protection Evaluation Report, Revision 17.3  
EOP 3509.1, "Control Room, Cable Spreading Area or Instrument Rack Room Fire," Revision 013  
EOP 3509.28, "Main Steam Valve Enclosure Fire," Revision 0

**Section 1R06: Flood Protection Measures**

Millstone 3 Internal Flooding Evaluation  
P(R)-1071, "Aux Building Flood Study: Maximum obtainable height of Flood Water in the Aux Bldg Due to a Pipe Break," Revision 0-1

**Section 1R11: Licensed Operator Regualification Program**

AOE #3, "Millstone Unit 2 LORT Annual Operating Exam," Revision 5/0  
LORT SE47, Revision 2  
LORT SE29, Revision 2

**Section 1R12: Maintenance Effectiveness**

ER-AA-MRL-100, "Implementing Maintenance Rule," Revision 4  
System Health Report, Station Blackout Diesel 2010 3<sup>rd</sup> Quarter  
System Health Report, 3322 Auxiliary Feedwater 2009 4<sup>th</sup> Quarter  
System Health Report, 3322 Auxiliary Feedwater 2010 1<sup>st</sup> Quarter  
System Health Report, 3322 Auxiliary Feedwater 2010 2<sup>nd</sup> Quarter  
System Health Report, 3322 Auxiliary Feedwater 2010 3<sup>rd</sup> Quarter  
Maintenance Rule Scoping table for SBO Diesel Generator  
Maintenance Rule Scoping table for the AFW System  
MRE010392  
MRE010628  
MRE010710  
MRE011854  
MRE011863  
MRE011892  
MRE012168  
MRE010914 FW check valves leaked by  
MRE011826 Relief Valve 3FWA\*RV64A failed high  
MRE011938 FW Check Valve Operability Test failed  
MRE011948 AFW Suction Pressure

MRE012026 AFW Control Valve Failed to open fully  
MRE012041 3FWA\*HV31C Stroked open 25 percent  
MRE012052 Leakage past 3FWA\*P1B vent valve  
MRE012292 TDAWF rack setting was low  
MRE012515 Millstone Unit 3 Terry Turbine INOPERABLE due to RV45 leaking  
MRE012519 TDAW pump failed surveillance SP3622.3-001 in June  
CR372956  
CR373226  
CR392045, "TDAFW pump had high out of spec recirc flow," dated August 21, 2010  
ACE018315, "TDAFW pump had high out of spec recirc flow," dated October 30, 2010

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

AWO 53M30410908, "PM 5 year molded case breaker cycling, M332-1U(3K)"  
AWO 53M30715129, "PM 5A-DC Molded Case Breaker Cycling M33BYS\*PNL2(06)"  
AWO 53M30119120  
C MP 782AE, "Overcurrent Device Testing for MCC and Molded Case Breakers," Revision 002  
DM2-00-057-10, "RS1 Transfer Switch Bypass Tie-in," Revision 0  
Medium/High Risk Contingency Plan Actions for VR-11  
OP 2326A, "Service Water System," Revision 023-08  
SPROC ENG10-2-003, "Millstone Unit 2 VR-11/21 UPS (ICCE) MMOD DM2-00-0057-10 Implementation," Revision 00-01  
Troubleshooting plan for CR 400684  
CR 400684  
CR403794, "Breaker for 3EGF\*TRS1A failed over current testing," dated November 15, 2010  
CR403788, "Contactor coil in 32-1U (4M) found degraded. Replacement complete," dated November 15, 2010  
CR406307  
CR408418

**Section 1R15: Operability Evaluations**

25203-26005, Sheet 2, "Piping & Instrument Diagram Feed System"  
25203-30044, Sheet 17, "Schematic Diag., 4.16KV Bus 24C," Revision 11  
25203-32041, Sheet 10, "DG 15G-12U Exciter Control," Revision 4  
125203-32041, Sheet 11, "DG 15G-12U Auto-Manual Voltage Control," Revision 10  
25203-39038, Sheet 11, "Schematic and Interconnection Diagram for Series Boost Exciter Voltage Regulator," Revision 2  
DCN DM3-00-0152-10, "Replace Motor Heaters for 3CHS\*P3C"  
Memo to file, "3SWP\*AOV39A Valve Body, Disc and Seat Retainer Ring Erosion," by D. Perry dated October 27, 2010  
ODM 000170, "Operation of 3CHS\*V368 failed open," dated September 28, 2010  
System Health Report 3346A, "EDG and EDG Fuel Oil," dated 4<sup>th</sup> Quarter 2009  
CR401027, "3SWP\*AOV39A Valve Body, Disc and Seat Retainer Ring Erosion," dated October 27, 2010  
CR 08-04889  
CR321796  
CR3988186, "Non-QA Part Installed into Millstone Unit 3 Charging Pump Motor," dated October 7, 2010  
CR400980

CR402188

CR393982

Drawing 25212-26904 Sheet 1, "Chemical and Volume Control," Revision 51

CR403794, "Breaker for 3EGF\*TRS1A failed over current testing," dated November 15, 2010

CR403943, "Received loss of control power alarm for 3EGF\*P1C breaker 32-1T(2K)," dated November 16, 2010

CR403972, "74 Relay for 32-1T(2K) found failed," dated November 16, 2010

System Health Report 3346A Emergency Diesel Generator, 4<sup>th</sup> quarter 2009

NEMA AB-4, "Circuit Breaker Testing"

UL Standard 489

C MP 782AE, "Overcurrent Device Testing for MCC and Molded Case Circuit Breakers," Revision 002

AWO 53M30410908, "M332-1U(3K) PM 5 Yr Mld Case Bkr Cycling"

### **Section 1R18: Plant Modifications**

DM2-03-0301-09, "Leak Encapsulation of #2 SG Feedwater High Point Vent Valve, M22-FW-261B," Revision 0

53102390517

CR404726

CR404739

### **Section 1R19: Post Maintenance Testing**

AWO 53M30410908, "PM 5 year molded case breaker cycling, M332-1U(3K)"

AWO 53M30715129, "PM 5A-DC Molded Case Breaker Cycling M33BYS\*PNL2(06)

AWO 53M30119120

WW1046 3EDG\*EGB, Outage November 15, 2010 to November 16, 2010 FEG Notes

WW1046 3EGF\*TK1B, Entry for November 17, 2010 FEG Notes

C MP 782AE, "Overcurrent Device Testing for MCC and Molded Case Breakers," Revision 002

OP3346A, "EDG," Revision 024-04

OP 2346A-004, "'A' DG Data Sheet," Revision 023-08

SP 2613K-002 "DG Slow Start Operability Determination Test, Facility 1 (Quick Start)," Revision 002-05

CR393943, "Millstone Unit 3 Degrading seat leakage trend for valve 3SWP\*AOV39A," dated September 8, 2010

CR394151, "'A' Train SWP pump Op test does not account for 3SWP\*AOV39A leak by," dated September 10, 2010

CR394189, "Degrading condition (3SWP\*AOV39A) adversely affected Tech Spec Surveillance," dated September 10, 2010

CR394213, "Procedure enhancements due to 3SWP\*AOV39A leakage," dated September 10, 2010

CR403710, 'A' EDG enclosure damper HVP\*MOD26A indicated dual position

CR403788, "Contactor coil in 32-1U (4M) found degraded. Replacement complete," dated November 15, 2010

CR403794, "Breaker for 3EGF\*TRS1A failed over current testing," dated November 15, 2010

### **Section 1R20: Refueling and Other Outage Activities**

OP 2204, "Load Changes," Revision 023-03

OP 2205, "Plant Shutdown," Revision 015-04

OP 2206, "Reactor Shutdown," Revision 011-02  
OP 2207, "Plant Cooldown," Revision 028-05  
CR404726  
CR404739

**Section 1R22: Surveillance Testing**

ETE-NAF-2010-0073, "Proposed Interim Compensatory Measures for Hypothetical Larger Than Expected Millstone Unit 2 Spent Fuel Pool Boraflex Loss," Revision 0  
PM01414, "Supporting Calculations for Millstone Unit 2 Spent Fuel Pool Boraflex Compensatory Measures," Revision 0  
CR404562  
53102395860

**Section 2RS01/2RS05/2RS11: Radiological Hazard Assessment and Exposure Controls, Radiation Monitoring Instrumentation and Licensed Operator Requalification**

Procedures

RPM 4.6.24, Revision 7, Small Articles Monitor Calibration  
RPM 4.8.11, Revision 8, Whole Body Contamination Response Checking  
RPM 4.8.9, Revision 10, Small Articles Monitor Operation  
RPM 4.6.6, Revision 5, Electronic Dosimeter Calibration Verification and Response Check  
RPM 4.6.29, Revision 2, Canberra ARGOS 4AB Contamination Monitor Calibration & Quality Assurance  
RPM 4.1.11, Revision 3, AMS-4 Air Monitoring System Calibration  
RPM 4.6.27, Revision 3, MGP-AMP-100/AMP 50 Dose Rate Meter Calibration  
RPM 4.8.1, Revision 6, Measuring the Radiation Intensity of the J. L. Shepherd Calibrator  
EN 21235, Revision 3, Millstone Unit 2 Radiation Monitor High Radiation Setpoints  
EN31153, Revision 5, Millstone Unit 3 Radiation Monitor High Radiation Setpoints  
RP-AA-103, Revision 0, ALARA Program  
RP-AA-103, 1000, Revision 0, Station ALARA Committee  
RP-AA-201, Revision 5, Access Controls for High and Very High Radiation Areas  
RP-AA-202, Revision 4, Radiological Posting  
RP-AA-226, Revision 0, Alpha Monitoring  
RP-AA-320, Revision 3, Personnel Contamination Monitoring and Decontamination  
RP-AA-300, Revision 2, ALARA Reviews and Reports  
RP-AA-301, Revision 0, ALARA Goals  
EP-AA-303, Revision 0, Equipment Important to Emergency Response

Observation of Daily Functional Checks or Calibrations

Portable Survey Instruments

\*RO-2, Serial No. 720  
\*\*AMP-100, Serial No. 5003-015

Contamination Monitors

\*SAM-11, Serial Nos. 494, 495  
\*SAM 12, Serial No. 159  
\*ARGOS 4A/B, Serial Nos 121, 123, 137  
\*PM-7, Serial Nos 560, 565  
\*\*\*SAC-4, Serial No. 1452

- \*\*\*BC-4, Serial No. 1022
- \* Observed Daily Source Checks
- \*\*Observed Calibration
- \*\*\* Reviewed Daily Quality Control Checks

Calibration Records Reviewed

Calibrators

Shepherd Calibrator Model 89, Serial Nos. 9068, 9155

Electronic Dosimeters

Serial Nos. 07705, 15713, 05335, 075385, 06660, 07866, 06189, 07051, 141289, 126878, 141170

Contamination Monitors

ARGOS 4AB, Serial Nos. 093, 096, 151, 137, 148, 136, 121, 120, 122, 123, 150, 095

SAM 9, Serial Nos. 071, 072, 042

SAM 11, Serial Nos. 497, 494, 495, 498, 597

SAM 12, Serial Nos. 129, 159, 150, 140, 144, 145

PCM-1B, Serial No. 535

SAC-4 , Serial No. 1452, 1451

43-2, Serial Nos. 7485, 7496, 21372, 21370,

Neutron Survey Instrument

REM-500, Serial Nos. 187, 234

Laboratory Instruments

Gamma Spectroscopy Detector Nos. 1, 2, 3, 4, 7, 8, 11, 12, 13, 15, 16, 20

Scintillation Counter Packard Tri-Carb Nos. 422931, 422932

Whole Body Counting Systems

FastScan whole body counting system

In-Plant Monitors

Unit 2

Containment Gaseous & Particulate Process Radiation Monitor (RM-8123)

Aerated Liquid Rad Waste Process Radiation Monitor (RM-9116)

Spent Fuel Pool Area Radiation Monitor (RM-8142)

Waste Gas Process Radiation Monitor (RM-9095)

Reactor Building Closed Cooling Water Radiation Monitor (RM-6038)

Clean Liquid Rad Waste Process Radiation Monitor (RM-9049)

Unit 3

Containment Area High Range Radiation Monitor (3RMS\*RIY05A)

Waste Neutralization Sump Radiation Monitor (3CND-RIY07)

Ventilation Vent Stack High Range Radiation Monitor (3HVR\*RIY10A)

Ventilation Vent Stack Normal Range Radiation Monitor (3HVR\*RIY10B)

Supplemental Leak Collection and Release System High Range Radiation Monitor (3HVR\*RIY19A)

Incore Area Kaman Scientific Area Radiation Monitor (3RMS-31)  
Control Room Area Kaman Scientific Area Radiation Monitor (3RMS-22)  
Fuel Storage Pool Area Radiation Monitors (3RMS-RIY08 & RIY36)  
Liquid Waste Radiation Monitor (3LWS-RIY70)  
Turbine Building Floor Drains Radiation Monitor (3DAS-RIY50)

Other Documents

2010 Annual Verification of J. L. Shepherd SN 9155  
2010 Annual Verification of J. L. Shepherd SN 9068  
Electronic Dosimetry Dose/Dose Rate Alarm Reports from April 12, 2010 through November 15, 2010  
Monthly, Quarterly, and Annual Liquid & Gaseous Effluent Dose Assessments for Unit 2 and Unit 3  
2R19 Outage Characterization Summary Report  
3R13 Outage Characterization Summary Report  
Design Change Notice DM2-00-0015-10, Shift Output Scaling Waste Gas RM-9095

Condition Reports

390746, 398918, 388737, 390793, 395965, 395976, 381125, 384436, 381125, 360363

Training Program Procedures

Licensed Operator Requalification Training (LORT), TPD-7.080, Revision 12 Change 4  
Training Review Boards, TR-AA-510, Revision 8  
2010 LORT Annual Operating Test Sample Plan

Job Performance Measures (JPMs)

018, 029, 040, 045, 048, 060, 067, 083, 123, 124, 156, 161, 161, 162, 177, 206, 220, 230, 234, A45

Scenarios

1, 2, 5, 7, 8, 28

Written Examinations

0016793, 0016794, 0016795

Simulator-Related Documentation

Simulator DR 2007-2-0062, DM2-00-0186-07, Unit 2 BAST Level Transmitter and Lo-Lo Setpoint Change  
Simulator DR 2008-2-0037, Upgrade of MP2 RSST Primary Channel Audio Tone System  
Simulator DR 2008-2-0042, Main FRV Lock Up on Loss of VR11 and VR21  
Simulator DR 2008-2-0046, Charging Pump Control Scheme - PTL Modifications  
Simulator DR 2008-2-0084, Remove Hydrogen Recombiner Annunciator Trip Window  
Simulator DR 2009-2-0044, FRV Response on Loss of VR11 and VR21  
Simulator DR 2009-2-0049, Gravity Feed Through Aux Spray Valve  
Simulator DR 2009-2-0055, MSI Signal Locks Up the Feed Regulating Valves  
Simulator DR 2010-2-0006, ESAS CR on UV Latching  
Simulator DR 2010-2-0011, Charging Pump White Lights on C-01X when in PTL  
Simulator DR 2010-2-0010, FW Regulating Valve Not Locking Up as Expected

Simulator Cycle 20 MOL Core Performance Test  
Simulator 2010 Steady-State Tests for 40 percent, 70 percent and 100 percent Power  
Simulator 2010 Transient Test TT1, Manual Reactor Trip  
Simulator 2010 Transient Test TT4, Simultaneous Trip of All RCPs  
Simulator 2010 Transient Test TT11, Maximum Load Rejection  
Simulator 2010 Normal Operating Test

**Section 40A1: Performance Indicator (PI) Verification**

LER 05000336/2009-003-00, "Two Independent DG Rendered Inoperable Due to Common Cause"  
LER 05000336/2009-003-01, "Two Independent DG Rendered Inoperable Due to Common Cause"  
LER 05000336/2009-004-00, "Overdue ASME Code Required In Service Test Did Not Meet Acceptance Criteria"  
LER 05000336/2009-005-00, "Both Containment Air Lock Doors Open in Mode 1"  
LER 05000336/2010-001-00, "Millstone Unit 2 Reactor Trip"  
LER 05000336/2010-002-00, "Manual Reactor trip on High SG Level"  
LER 05000423/2008-005-01, "Containment Penetration Not Fully closed During Fuel Movement"  
LER 05000423/2009-002-00, "Millstone Unit 3 Automatic Reactor Trip"  
LER 05000423/2010-002-00, "Automatic Reactor Trip on Lo SG Level"  
LER 05000423/2010-003-00, "Secondary Containment Rendered Inoperable Due to Misaligned Dampers"  
LER 05000423/2010-004-00, "Inoperable Turbine Driven Auxiliary Feed Pump Due to Degraded Relief Valve"

**Section 40A2: Identification and Resolution of Problems**

Corrective Action Program Trend Report, 2<sup>nd</sup> Quarter 2010  
Corrective Actions Performance Indicators August 2010  
Equipment Reliability Performance Indicators August 2010  
Human Performance Index Performance Indicators August 2010  
RCE001025, "August 2010 INPO AFI ER2.2, Inadequate standards for Late and Deferred PMs," Revision 0  
CR381824  
CR382383  
CR385130  
CR386692  
CR387535  
CR391393  
CR401719  
CR402842  
CR403210  
CR403240

**Section 40A3: Event Follow-up**

OP 2202, "Reactor Startup ICCE," Revision 022-01  
OP 2203, "Plant Startup," Revision 019-02  
CR405377



CR405379  
CR405404

**Section 40A5: Other Activities**

Collective Significance Evaluation CR364058  
Addendum to Collective Significance Evaluation CR364058  
CR-08-05433  
CR332878  
CR113021  
CR369728  
CR372524  
CR395530  
CR395532  
CR398221  
CA167236  
CA167237  
CA167238  
CA167239  
CA167240  
CCA000109  
PI-AA-200, "Corrective Action," Revision 12  
PI-AA-200-2002, "Effectiveness Reviews," Revision 3  
PI-AA-300, "Cause Evaluation," Revision 5  
PI-AA-300-3003, "Common Cause Evaluation," Revision 0  
Dominion IT Policy 400, "ID & Authentication," dated December 31, 2009  
Dominion Principles of Professionalism  
Corrective Action Review Board Meeting Minutes, dated September 28, 2010  
Plant Access Training slides  
Dominion Criminal History Self Disclosure Forms, dated July 2010 and February 2009  
Millstone Site Communications "To the Point," dated June 30, 2010  
Millstone Site Communications "To the Point," dated November 3, 2010  
NRC letter to Dominion, "NRC Investigation Report No. 1-2008-051 Millstone Nuclear Power Plant," dated September 10, 2009 [ML092530157]  
NRC letter to Dominion, "NRC Investigation Report Nos. 1-2009-018 and 1-2009-030; Millstone Nuclear Power Plant," dated December 14, 2009 [ML093480369]  
NRC Office of Investigations Case No. 1-2008-051, dated April 23, 2009  
NRC Office of Investigations Case No. 1-2009-018, dated August 4, 2009  
NRC Office of Investigations Case No. 1-2008-030, dated August 26, 2009  
ACE018046  
CR369962  
CR370566  
PI-AA-200, "Corrective Action," Revision 14

# LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AFW	Auxiliary Feedwater
ALARA	As Low As Reasonably Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CLB	Current Licensing Basis
CR	Condition Report
CW	Circulating Water
DG	Diesel Generator
DNB	Departure from Nucleate Boiling
DNC	Dominion Nuclear Connecticut
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
FRBV	Feed Regulating Bypass Valves
FSAR	Final Safety Analysis Report
HPSI	High Pressure Safety Injection
HRA	High Radiation Areas
I&C	Instrumentation and Control
IMC	Inspection Manual Chapter
JW	Jacket Water
LER	Licensee Event Reports
LHRA	Locked High Radiation Areas
mrem	millirem
MSPI	Mitigating System Performance Indication
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OD	Operability Determinations
OOS	Out Of Service
PARS	Publicly Available Records System
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PM	Preventive Maintenance
PMT	Post Maintenance Testing
RCA	Radiologically Controlled Area
RCE	Root Cause Evaluation
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RSS	Recirculating Spray System
RWP	Radiological Work Permit

SBO	Station Blackout
SDP	Significance Determination Process
SG	Steam Generator
SL	Severity Level
SSFF	Safety System Functional Failures
SW	Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Issue
VFD	Variable Frequency Drive
VHRA	Very High Radiation Areas
WO	Work Order